"DEVELOPMENT AND VALIDATION OF MULTIMEDIA RESOURCE MANAGEMENT (MRM) PROGRAMME FOR TEACHERS"

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1. INTRODUCTION:

Present era is the era of information and communication technology (ICT). The ICT has entered in our lives in a big way and has vanished the boundaries and barriers among nations. There was a time when the world was big and changes were slow but now it has been converted into a global village. Information and communication technology has developed rapidly over the past twenty years. Its wide application makes a huge impact on the society and our daily life. In particular, information and communication technology (ICT) breaks the traditional boundaries of learning and teaching, and brings enormous changes to the education sector.

1.1 MEANING AND DEFINITIONS OF MULTIMEDIA:

The word 'multimedia' originally referred to the works of arts that combined multiple traditional art media, as in multimedia art installation. The term multimedia appeared in 1990s. The concept of multimedia has been described by educationists in different ways at different times.

Multimedia in general means that information is presented in the form of audio, video and animation in addition to traditional media (i.e., text, graphics, drawings and images) Multimedia can be defined as the field concerned with the computer controlled integration of texts, graphics, drawings, still and moving images (videos), animation, audio and any other media that can be represented, stored, transmitted and processed digitally.

Definitions of Multimedia:

The definitions of multimedia given by different educationists and perspective as given below;

1. “Multimedia can be defined as computer based technology integrating some not necessary all of the following, text, graphics, animation, sound and video.”- Barron and Owing (1995).
2. Multimedia delineated as- “the use of multiple forms of media in one presentation.” Schwartz & Beichner (1999, p. 8).
3. “Multimedia is presentation of information in the form of graphics, audio, video, or movies. A multimedia document contains a media element other than plain text.” – Greenlaw & Hepp (1999, p. 44).

4. "Multimedia refers to a computer system based upon the integration of various media such as text, sound, graphics, animation and video, is a powerful tool for knowledge construction." - Janassen (2000)
5. Multimedia teaching integrates verbal element like printed and recorded text, and visual element like pictures, graphs, photos, and dynamic graphics etc.- Mayer (2001).
6. Multimedia is most undertaking educational technological tool that means any type of file may be text/ document or ppt /presentation, that have audio or visual effects or "an interactive information café". – Weidong Xhang (2003)

1.2 ORIGIN AND DEVELOPMENT OF MULTIMEDIA:

The Multimedia has evolved into an essential part of the modern educational programme. Moreover, it has been prevalent and commonly used in the vast number of schools and educational institutions. This teaching method aided in the computer by using the wide-ranging media forms, can efficiently elude and overwhelmed the traditional teaching methods on many shortcomings, while being able to effectively shorten the time and convalesce the condition of teaching and learning effectiveness, to achieve the prime teaching goal. Since teachers are main architecture of excellence learning proficiencies for students.

Teaching is the only field, where we are handling the students, who will become the next generation citizens. Teachers are responsible to provide required skills and positive attitude necessary for the future citizens. So, they are called as the nation builders. Hence, the destiny of a nation is designed by teachers as teaching is a profession, which lays the foundation for grooming and preparing the individuals for all other professions.

Therefore, the success of an educational system mainly depends upon the excellence of teachers' knowledge and creativity of his profession. Using different available technology judiciously can be possible by integrating multimedia education in the teacher education environment to teach & train and motivating the prospective teachers to apply one multimedia technology. So, educators need to infuse innovative technology like multimedia with educational theoretical framework that makes prospective teachers justify to us it in classroom.

Multimedia knowledge is indispensable tool for prospective teachers, who must be amalgamate multimedia into content presentation and instruct with cognitive instruments. Multimedia technology is not only better than tradition method of teaching but also provide varied experience to students and make teaching leaning programmed fascinating.

Table-1: Comparison between Traditional and Multimedia Instruction

CHARACTERISTICS	TRADITIONAL INSTRUCTION	MULTIMEDIA INSTRUCTION
Instructional Philosophy	Behaviourist	Constructivist
Teacher's Role	Didactic Lecture	Facilitator
Student's Role	Passive learner	Active Learner
View of Collaboration	Descriptive Knowledge	Constructive Knowledge
Learning Environment	Dull and Monotonous	Stimulating and Fun
Learning Paradigm	Content-driven	Concept driven
Problem Solving	Algorithmic Situated	Situated and relevant
Pedagogy	Abstract to concrete	Concrete to abstract
Communication	Teacher-directed	Student-initiated
Adaptively	Non-flexible	Flexible

1.3 MULTIMEDIA RESOURCE MANAGEMENT (MRM):

It is flat form wherein the desired multimedia teaching-learning material related to the any content of choice is made available in terms of database. Which will be easily accessible and comfortable at various operating systems and in both online and offline modes.

1.4 MULTIMEDIA RESOURCE MANAGEMENT (MRM) PROGRAMME:

This is a software which will have the facility to input desired multimedia material on any topic for teaching-learning. The software will have facility for the teacher to add, copy

and delete digitized multimedia teaching-learning material such as text material, PPT, Audio, video, pictures, e-books and website links etc with additional features and make use of them in their classroom teaching. Here, the teacher/learner will have the choice to make move as per his/her needs and teach/learn the content.

1.5 NEED AND SIGNIFICANCE OF THE STUDY:

In the Indian context the development of multimedia can be traced from the past fifty years. Studies at Centre of Advance Study in Education (CASE); MS University Baroda, Gulburga University, Kalaburagi and SNDT Women's University, Pune as reported in the All India Educational Survey and in Shodhaganga provide ample evidence in this direction.

Studies under taken by Ravindranath M, J, R. Govinda, SS Krishnan, M. M Mukhopadya, both V.D, M B Menon, and in recent years E. R. Ekbote and Vasudha Kamat are the worth mentioning.

The UNESCO work of Prof S.S. Kulkarni in this direction on development of software material in Educational Technology set a path way in this direction. The modules prepared under its UNESCO project provide details of multimedia material development with scientific approach.

Studies undertaken by Krishnan using OHP and audio tapes was initiation towards use of hardware. Mukhopadhya used slide and tape as a progressive technology in this direction. The UNESCO work of Prof. Kulkarni is standard multimedia material with slides, tapes, text material and PLM.

The role of teacher as instructional specific (Pedagogist) cannot be undermined. The pedogogist participates in multimedia approach at two levels. During the development of material he predominates in providing analysis of subject content to be used, the sequence of content to be placed as material of teaching and selection of appropriate multimedia for a given context. He also is a major decision maker in designing the overall approach to the curricular transaction and experience creation.

Hence, there is need to re-orient the multimedia programmes. Where in the teacher is as the prime manger of instruction and learner is the centre of instruction. The material to be developed will provide a plat form where all the available multimedia from various sources can be systematically stored and made available through a contingent of arrangement as per the prescribed content of learning.

To overcome these difficulties there is an urgent need to develop a plat form where in an opportunity is provided to both teacher and learner to systematically store, edit resources and use through a single window in systematic form.

In another context, due to globalization, marketing and advancement in the education field educational software's are evolved. In this modern era we find greater development in the field of educational software. But, the software's available in the market are highly commercialized and content integrated. There is no scope for flexibility for teacher and students, educational principles are not incorporated and only rich in graphics and animations. Hence it is evident that, there is urgent need to create user-friendly, flexible, educational principle incorporated and academic inputs integrated educational software's.

By keeping above contexts, researcher will plan to undertake the study Development and Validation of Multimedia Resource Management (MRM) Programme for Teachers.

1.6 STATEMENT OF THE PROBLEM:

The Researcher will undertake the study **"Development and Validation of Multimedia Resource Management (MRM) Programme for Teachers".**

1.7 OBJECTIVES OF THE STUDY:

The following objectives are framed for the present study;

1. To develop **'**Multimedia Resource Management Programme-(MRMP)' for school and college Teachers.
2. To validate the MRM Programme against school teachers in terms of planning and teaching effectiveness.
3. To validate the MRM Programme against college teachers in terms of planning and teaching effectiveness.

4. To find out the effectiveness of MRM Programme in terms of its user friendliness, flexibility and acceptance by school teachers.
5. To find out the effectiveness of MRM Programme in terms of its user friendliness, flexibility and acceptance by college teachers.

1.8 HYPOTHESES OF THE STUDY:

The following research hypotheses are framed for the present study;

1. The MRM Programme is effective in terms of planning and teaching effectiveness.
2. The classroom teaching with the MRM Programme is more effective than those assisted with traditional teaching.
3. The MRM Programme is effective in terms of its user friendliness, flexibility and acceptance by school teachers.
4. The MRM Programme is effective in terms of its user friendliness, flexibility and acceptance by college teachers.

1.9 OPERATIONAL DEFINITION OF TERMS USED:

1) **Resource Management**: It is flat form wherein the desired multimedia teaching-learning material related to the any content of choice is made available in terms of database. Which will be easily accessible and compatibility at various operating systems and in both online and offline modes.
2) **Multimedia Resource Management (MRM) Programme:** This is a software which will have the facility to input desired multimedia material on any topic for teaching-learning. The software will have facility for the teacher to add, copy and delete digitized multimedia teaching-learning material such as text material, PPT, Audio, video, pictures, e-books and website links etc with additional features and make use of them in their classroom teaching.
3) **Validation:** Validation is the process of ensuring that, the developed material satisfies the objectives pre-decided for the programme/software. In other words, it is the process to find out the extent of serving the purpose for which it has been developed**.**

4) **User friendliness:** It is the capacity of the software to reach the needs of different competency based teacher and student community to use the software/ programme with flexibility. In other words, it is the capacity of the software program to provide multimedia programmed learning material interface benefits between the content and the learner.

5) **Flexibility:** It is the ability to provide i) freedom to the teacher/learner to make choice of the content point he desires to teach/learn and switch to its specification instantaneously and ii) freedom of making choice by the teacher/ leaner to use the media of his/her interest viz text material, PPT, audio, video, pictures, books and Internet websites with ease to the teacher/learner as per his/her needs.

6) **Usability:** It is the scope of the software to use with various types of content, to use on various computer platforms, to use with different computer processor and with varied resolution oriented monitors, to use with different age group learners and teachers.

1.10 VARIABLES OF THE STUDY:

The following variables were considered for the present study;

1. **Independent Variables:** MRM programme
2. **Dependent Variables:** teaching effectiveness
3. **Co-variables:** Computer ability, language ability, IQ, Content Mastery, Usage of software and type of school

1.11 DELIMITATIONS OF THE STUDY:

In order to make the study concise, its scope pertaining to some of the aspects will be planned to limit to some extent. This study will be conducted in ICT-pro Teacher Education institutions (TEI) and school teachers of north Karnataka.

2. REVIEW OF RELATED LITERATURE:

2.1. Reviews related to Multimedia:

H.R. Bhutak (2004) Conducted study on Development and effectiveness of Multimedia Package for Science Subject of Standard 9. The results indicated that, Multimedia package was more effective in terms of achievement and retention of science for both the groups of girls and the boys separately and jointly.

T.R. Hirani (2007) Conducted study on Development and Try-out of Computer Based Multimedia Package for Instruction in Gujarati Language. The study was of experimental type. The results indicates that, the students of Computer Aided Multimedia Package group scored significantly higher on post-test than the students of traditional method group and Students opined favourably for learning through Computer Aided Multimedia Package.

Zhang zhen, leshan normal university lehan, china (2016), conducted a study to the use of multimedia in English teaching. The findings of study concluded that, there is in future multimedia technology is likely to be a necessity not only for English teaching but also for teaching for many other subject.

Vilas B Bandgar, Vishnu P ., Shikhare (2019) conducted study to develop multimedia package to teach geographical concepts at the secondary level. Researcher has used a survey and experimental method and made two equal groups for pre-post test. The findings of the study the developed multimedia packages related to geography subject were quite effective and developed the curiosity and interest among the learners.

2.2. Reviews related to Software development and its validation:

Prabhakar, S., (1995), conducted study on Development of Software for Computer Aided Instruction and its Comparison with Traditional Method for Teaching Physics at Plus II level. The present study was experimental and pre-test-post-test control group design was used. The results indicated that, The CAI material was found to be effective in terms of achievement and reaction towards CAI material of both class XI and XII students. The CAI was found to be significantly superior to traditional method in terms of achievement of class XII students when moderate variables were considered as covariates separately.

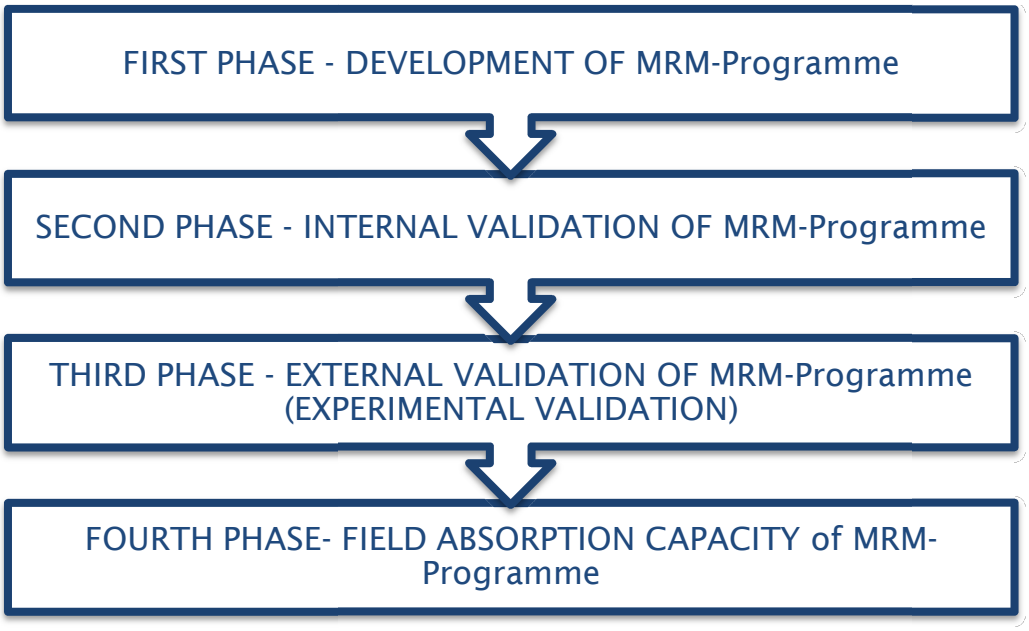
Mark Notess. (2008), Applying Contextual Design to Educational Software Development: Indiana University, USA,. Contextual Design is a methodology for developing information systems from a rich understanding of customer work practice. This chapter considers how Contextual Design can be applied to educational software development and how Contextual Design might interact with Instructional Systems Design (ISD). Following a brief overview of ISD, He describe Contextual Design and provide a detailed case study of its application to educational software development — to the design of an online tool for music listening and analysis in undergraduate and graduate music education.

Dily (2008), Conducted a study entitled as "The effect of using Mathematics software produced locally on second grade intermediate female students' academic achievement in Riyadh." The study sample consisted of 70 female students divided equally in two experimental and control group which were taught by the locally produced software and traditional method. The study revealed no statistical significant difference between experimental and control group at 0.05 level of significance.

Prakash Badiger (2017), has undertaken study entitled **"**Development and Validation of Computer Aided Lesson Planning (CALP) software for Teaching Practice". Researcher has discussed 4 phases of research design. In the first phase development of CALP software, second phase internal validation of the CALP software, third phase external validation of CALP software and fourth phase field absorption capacity of CALP software. For data analysis t-test and percentage analysis techniques were used. The findings of the study are, the computer aided lesson planning is more effective than traditional planning in terms of teaching effectiveness. The CALP software is effective in terms of its user friendliness, flexibility and Acceptance by in-service teachers.

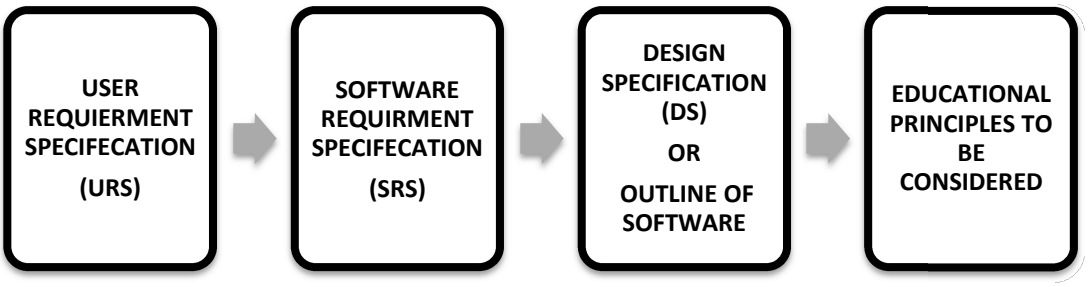
3. RESEARCH METHODOLOGY:

The New Product Development (NPD) research methodology will be adopted by the researcher for the development and validation of Multimedia Resource Management (MRM) programme for School and college Teachers. Hence for the present study investigator is decided to follow experimental method of research. This package development and validation process will be as follows;


FIRST PHASE - DEVELOPMENT OF MRM-Programme
SECOND PHASE - INTERNAL VALIDATION OF MRM-Programme
THIRD PHASE - EXTERNAL VALIDATION OF MRM-Programme (EXPERIMENTAL VALIDATION)
FOURTH PHASE- FIELD ABSORPTION CAPACITY of MRM-Programme

PHASE -1: DEVELOPMENT OF MRM-PROGRAMME

During the first phase, the researcher planned to develop the MRM Programme. Here she planned to design the MRM package and its development. The designing process involves the following sequential steps;


USER REQUIERMENT SPECIFECATION (URS)
SOFTWARE REQUIRMENT SPECIFECATION (SRS)
DESIGN SPECIFICATION (DS) OR OUTLINE OF SOFTWARE
EDUCATIONAL PRINCIPLES TO BE CONSIDERED

PHASE -2: INTERNAL VALIDATION OF MRM-PROGRAMME

During the second phase, the researcher planned for the internal validation of MRM Programme. This will be done against software architects, educational experts, educators, in-service teachers, student-teachers and students so as to find out the errors and required necessities in modifying the content and software.

PHASE -3: EXTERNAL VALIDATION OF MRM-PROGRAMME

During third Phase, the researcher planned for External validation of MRM Programme. External validity is designed with the four steps as follows;

(i) Selection and development of tools for co-variable measurement:

Following co-variable tools will be used in the study;

1. Multiple Intelligence (M.I) Test - (Howard Gardeners')
2. Achievement Motive Test (ACMT) - (V.P. Bhargava)
3. Computer Aptitude Test - (Self developed)

(ii) Tools development for dependent-variable measurement:

The following dependent-variable tools will be used in the study;

1. Baroda General Teaching Competency Scale (BGTCS)
2. Teacher-educator/teacher reaction scale (Self developed)
3. Student-teacher/student reaction scale (Self developed)

(iii) Development of experimental design:

For experimentation parallel group design will be adopted for the smooth conduct of experiment.

(iv) Experimental treatment:

The experiment will be conducted in two phase viz., Phase-1: for college teachers and Phase-2: for school teachers.

Population for experiment:

ICT-pro Teacher Education institution (TEI) and school are the essentiality to validate the package.

Sample:

The study is designed with the purposive sampling based validation. Among the interested list of teacher educators of TEI with their student-teachers and school teachers with their students were the sample for the study.

Table-1: Details of sample for experimentation Phase-1 (for College)

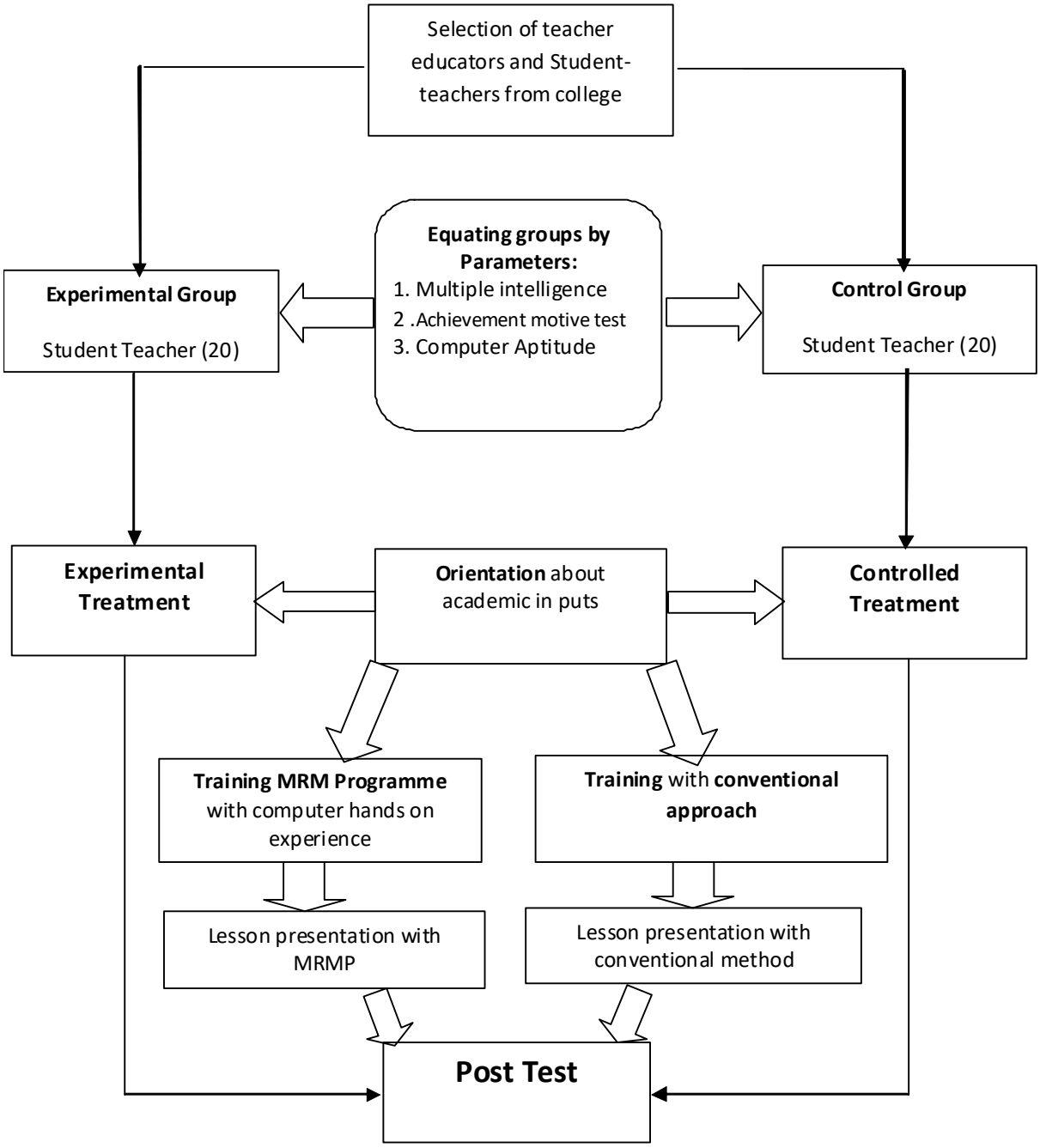
Sl No	Name of the Teacher-education Institution	No. of Student teachers Selected	No. of teacher educators Selected
1	Shri Padmaraj College of Education, Sindagi	40	2
Total		**40**	**2**

Table-2: Details of sample for experimentation Phase-2 (for school)

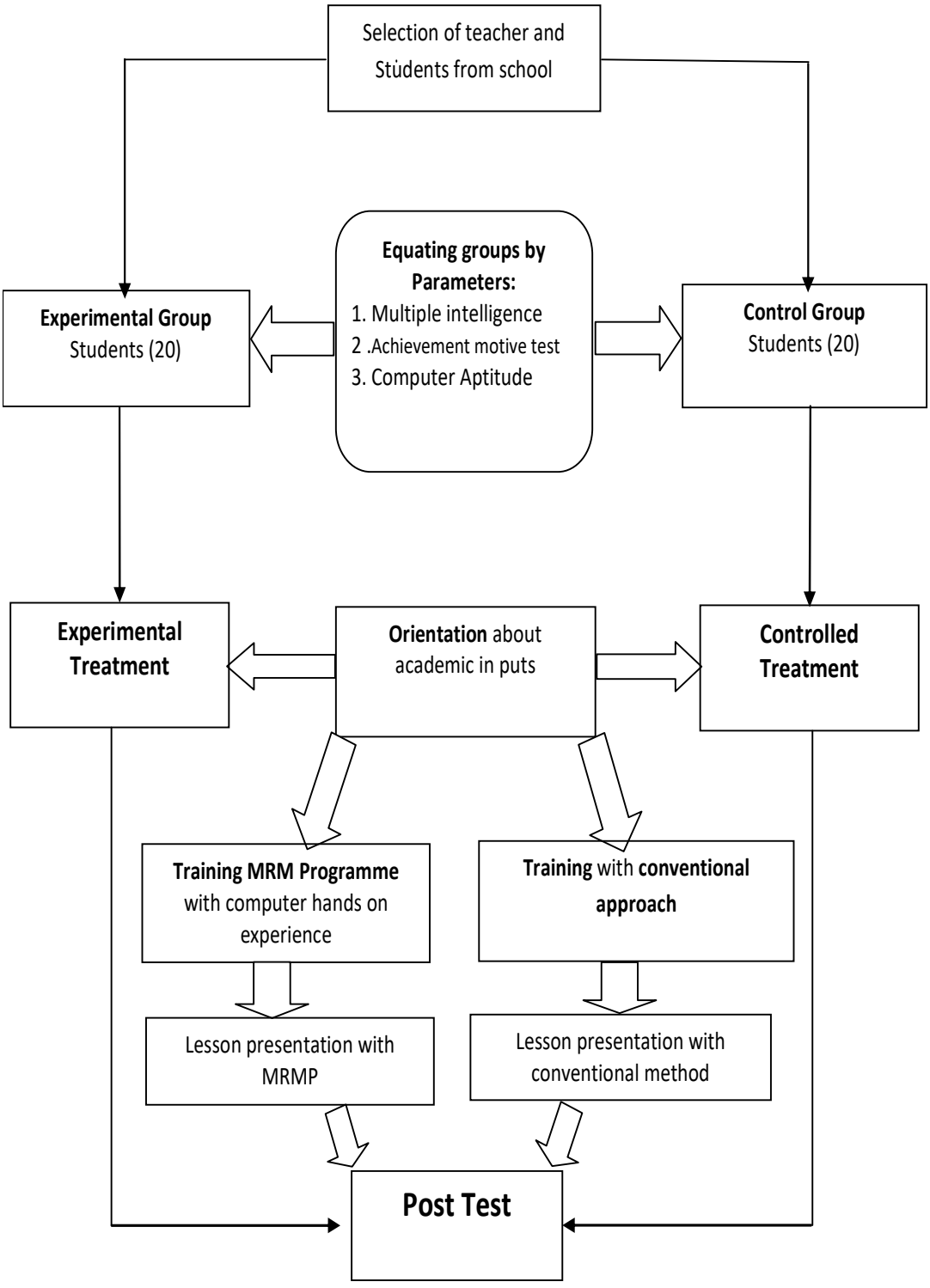
Sl No	Name of the School	No. of Students selected	No. of teachers selected
1	Jnanabharathi high school, Sindagi	40	2
Total		**40**	**2**

The schematic designs of the experiment are given in the proceeding flowchart.

Flowchart -1: Experimental design



Flowchart -2: Experimental design for Phase-2


Selection of teacher and Stùdents from school
Equating groups by Parameters:
1. Multiple intelligence
2 .Achievement motive test
3. Computer Aptitude
Experimental Group Students (20)
Control Group Students (20)
Experimental Treatment
Orientation about academic in puts
Controlled Treatment
Training MRM Programme with computer hands on experience
Training with conventional approach
Lesson presentation with MRMP
Lesson presentation with conventional method
Post Test

PHASE -4: FIELD ABSORPTION CAPACITY OF MRM-PROGRAMME

During fourth Phase, researcher will conduct field absorption capacity of the MRM Programme with teacher educators, student-teachers and in-service teachers for its effectiveness. For this purpose, the researcher will plan to administer three tools prepared namely Teacher-educator reaction scale, Student-teacher reaction scale and teacher reaction scale to the teacher educators, student-teachers and in-service teachers for the effectiveness of programme developed.

4. PROCEDURE FOR DATA ANALYSIS:

The data obtained on various tools will be treated quantitatively. Basically computation of mean testing and testing the hypothesis will be the t-test; ANOVA will be used for various variables. Percentage analysis and graphical representation will use with all other types data.

5. EXPECTED OUTCOMES:

The study will provide a well tried out MRM Programme to be used for effective classroom teaching at college and school level by the teachers. Study will also be helpful to the students for their self learning.

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